

**ABSTRACT OF THE DISCLOSURE**

Electrochemical deposition (ECD) processes and systems used in the fabrication of products such as semiconductor devices, and more specifically an on-wafer process and apparatus of such type, in which the workpiece being plated is utilized as an electrode element in the monitoring operation, thereby substantially simplifying the analytical monitoring metrology of ECD operation. The invention is usefully employed in copper electrodeposition involving control of organic additives concentrations in the copper plating bath, to achieve highly efficient copper metalizing of wafer substrates.